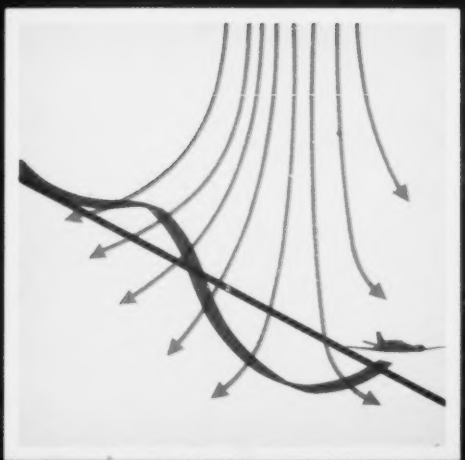
DECEMBER 1981 $2.50

Business and commercial Aviation®

including COMMUTER — Starts Opposite Page 76

12/11/81 C 9700-2

B/CA Analysis: Cessna T303



Shear nique

The Federal 200 Commercial

Contents

December 1981

Editorial ____ 15
Making the System Work: During these times of ATC headaches, communicating with the FAA will produce the best results.

Letters ____ 16
A Challenge for Pilots: B/CA's call for professionalism prompts reader response.

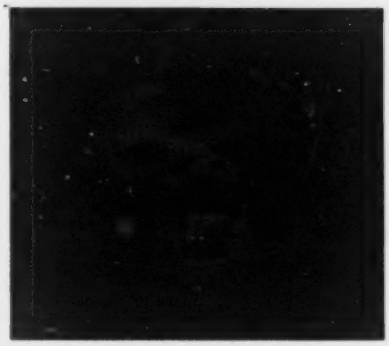
Intelligence ____ 31
New Minimum Equipment List Provisions Proposed; Comments Are Requested on the FAA's "Task Force."

Reflections ____ 46
The Big Singles Part I: Staggerwing: The first article in a series on big singles reviews some concepts of aircraft design that still are relevant today.

B/CA Analysis: Cessna T303 Crusader ____ 50

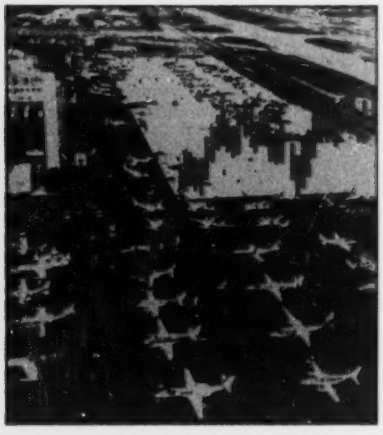
Cessna's newest twin, the Model T303, features attractive handling characteristics and a low initial cost even though its performance falls a bit below its popular predecessor, the Model 310.

General Aviation's First Four-Color Radar ____ 60



Bendix has designed a feature into its new RDR-1150HP radar that displays another level of rainfall rate. In addition, the new radar is capable of partly compensating for attenuation due to rain.

Business Aviation and the *Fortune* 1,000 ____ 64



This year's analysis of the *Fortune* 1,000 companies not only shows an increase in the number of companies operating aircraft, but also some other surprising trends.

CLEARANCE DELIVERY

No, that is not a young Howard Hughes at the controls of the *Spruce Goose*, although the aircraft *is* the late billionaire's unique plywood flying boat. The person sitting in the aircraft is B/CA's Chief News Editor Gordon Gilbert, who recently was photographed in the famous airplane during a business trip.

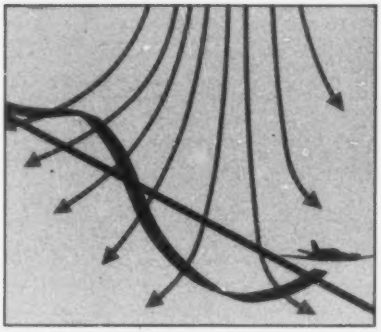
Gordon plays a vital role in B/CA's mission to bring pilots the information they need to fly safely and efficiently. As the principal (and often the sole) editor of *Intelligence*, he is responsible for the best-read section of B/CA. He also prepares *Calendar* as well as many of the items that appear in *Product Analysis*. Oh yes, when he has a few spare moments, he often prepares material for *Traffic Pattern*.

As if his writing tasks are not quite enough to keep him occupied, he is a vital element in B/CA's processing of all editorial material for accuracy.

Aviation and journalism have been in Gordon's blood for all his adult life. After completing a master's degree in journalism at California State University at Northridge, he became an Aviator in the U.S. Army. Upon completing his military service as a captain assigned to the infantry in Korea and Viet Nam, he served as a writer for Pan American Navigation Services and Aero Products

It's Value, Not Cost, That Counts 70
As a young corporate flight department, the pilots at the Galveston-Houston Company have met the challenges of their corporation's transportation needs.

AIRMANSHIP
Winning Against Wind Shear 79



Although wind shear should be avoided, thorough preparation and solid pilot technique can reduce the threat if it is encountered.

A Systems Approach to Recip Engine Instruments 82
Proper use of engine instruments can help detect immediate problems and monitor long-term engine trends.

IRA and the New Tax Law 94
Retirement is part of all employee's plans, and the smart worker will formulate a pension plan that will protect him. As part of this plan, an individual retirement account has been made more attractive since the passage of the new tax law.

Cause and Circumstance 98
Little Things Mean a Lot: A highly qualified and experienced crew descended into the ground during a localizer approach. Why?

Product Analysis 102
SCAT Optimizes Piloting Techniques

Traffic Pattern 108

General Aviation Reservation Plan: the First 10 Days.

Calendar 118
FSF Sponsors Workshop: Geared toward the corporate flight department, this seminar is designed to help improve safety.

Washington 120
Just a Bad Dream?: User taxes, the PATCO strike and a general aviation reservation system—a bad dream or reality?

Hardware/Software 122
Putting the Heat on Icing: Recommendations have been made by the NTSB to fund a joint program to improve forecasting and coping with icing conditions.

Greenhouse Patter 124
Rally 'Round the Curfew: Torch calls on all pilots to support legal action against the Westchester County Airport curfew.

Market Place 119

Advertisers' Index 123

Research. B/CA was fortunate to acquire his expertise in 1973.

In addition to his writing and research skills, Gordon remains active as a private pilot, a qualification he uses in the furtherance of his several responsibilities at B/CA.

THE COVER

B/CA's Contributing Photographer Neil Shively took the inflight photo of Cessna's newest twin, the T303. The sketch depicting the *Fortune* 1,000 article was drawn by B/CA Art Director Mike Perry, and the wind shear art was done by B/CA Art Assistant Andrea Sckolnik.

Publisher and Divisional Vice President
David W. Ewald

Editor and Associate Publisher
John W. Olcott

Senior Editor
Richard N. Aarons

Technical Editor
George C. Larson

Managing Editor
Lorraine Dempsey

Chief News Editor
Gordon Gilbert

Staff Editors
Robert Parrish
John Novellino

Copy Editor
Robert A. Searles

Washington Editor
Arnold Lewis

Art Director
David M. Perry

Associate
Torch Lewis

Special Features
Dan Manningham

Contributors
Bill Cotton
John Fricker

Research Editor
Jessica Salerno

Assistant to the Editor
Kathleen M. Sky

Art Assistance
Andrea Sckolnik

Production Assistant
Mary Pier

Contributing Photographer
Neil M. Shively

Production Manager
Susan F. Gessner

COPYRIGHT © 1981
BY ZIFF-DAVIS PUBLISHING COMPANY
ALL RIGHTS RESERVED

Business and commercial Aviation

Business Aviation and the *Fortune* 1,000

Of the top 1,000 industrials listed by *Fortune* magazine, 541 operate aircraft. These companies continue to be more profitable, more productive and, seemingly, more stable employers.

by Jessica Salerno

Once again operators of corporate aircraft have outperformed, in almost all areas, their nonoperating counterparts, according to an analysis of the 1980 financial results of *Fortune* magazine's top 1,000 industrial corporations. The statistics were reviewed recently by Aviation Data Service, Incorporated of Wichita.

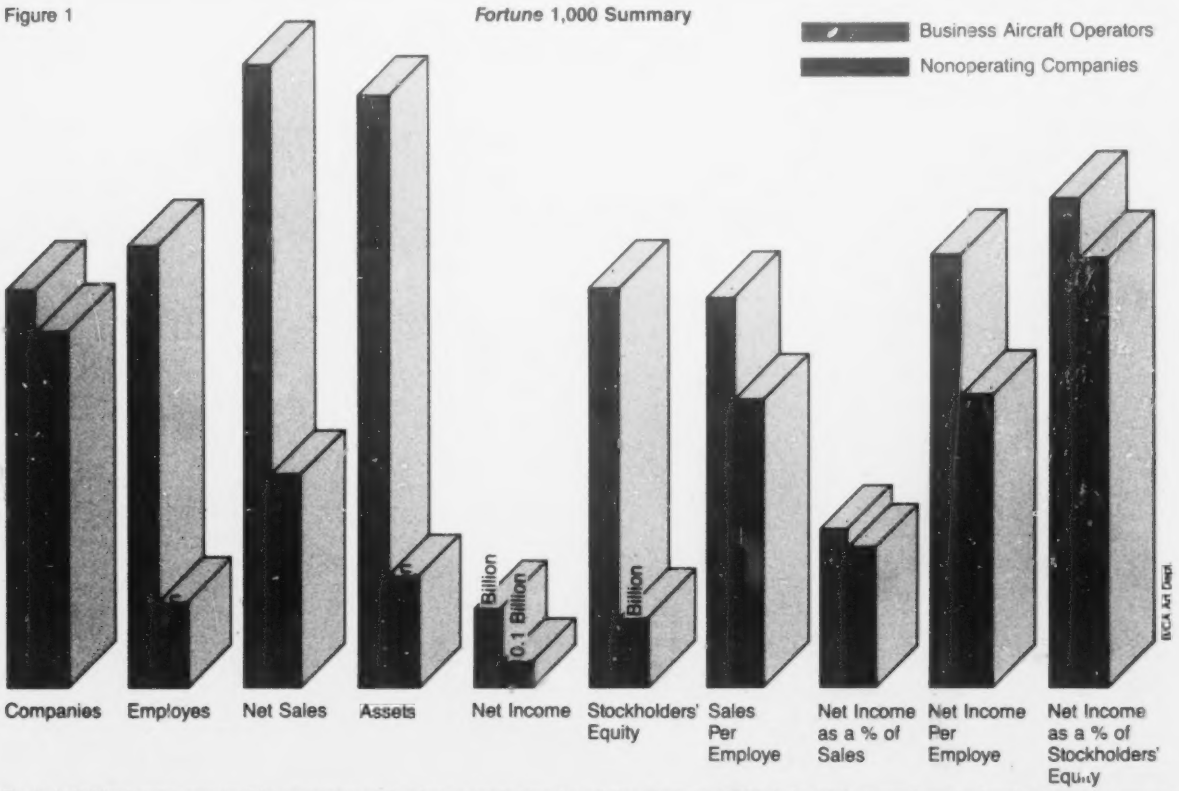
The total number of aircraft operators is only up slightly to 54 percent—541 operators in 1980 versus 524 in 1979—but the total size of the fleet has increased significantly, by 9.2 percent, from 1,842 in 1979 to 2,012 in 1980. However, their percentage of net sales remained unchanged from 1979 at 87 percent.

Companies operating aircraft in 1980 continued to hold significant leads in most other areas, and the analysis shows that these 541 companies who operate aircraft have 84 percent of the 17.6 million employes of the top 1,000 corporations, 89 percent of $1.262 trillion in assets, 88 percent of $87 billion in net income and 88 percent of $584 billion in stockholders' equity.

In terms of productivity per employe or sales per employe, the gap between aircraft operators and nonoperators is wide. The statistics show average sales per employe for operating companies were $105,252 compared with $75,376 for nonoperators. That is, companies operating aircraft did 40 percent better.

Even more dramatic is the difference in the area of net income per employe. Aircraft operators averaged $5,244 per employe compared with $3,475 per employe for the nonoperators. The difference of $1,769 per employe puts aircraft operators 51 percent ahead.

Figure 1



Each individual category in this summary of business performance of the Fortune 1,000 industrials reveals an advantage to the aircraft operators. The 541 companies operating aircraft excel in every single area.

Figure 2

Comparative Fleet Size

Number of Aircraft	Number of Companies
1	118
2	112
3	79
4	36
5	22
6	28
7	17
8	12
9	5
10	6
11	7
12	3
13	2
14	6
15	5
17	3
18	2
19	1
22	1
24	1
28	1
32	1
36	1
37	1
38	1
2,012	541

And keeping in mind that the ratio between operators and nonoperators is not that large—541 versus 459—net sales by aircraft-operating companies of $1.55 trillion was over seven times that of nonoperating *Fortune* 1,000 companies.

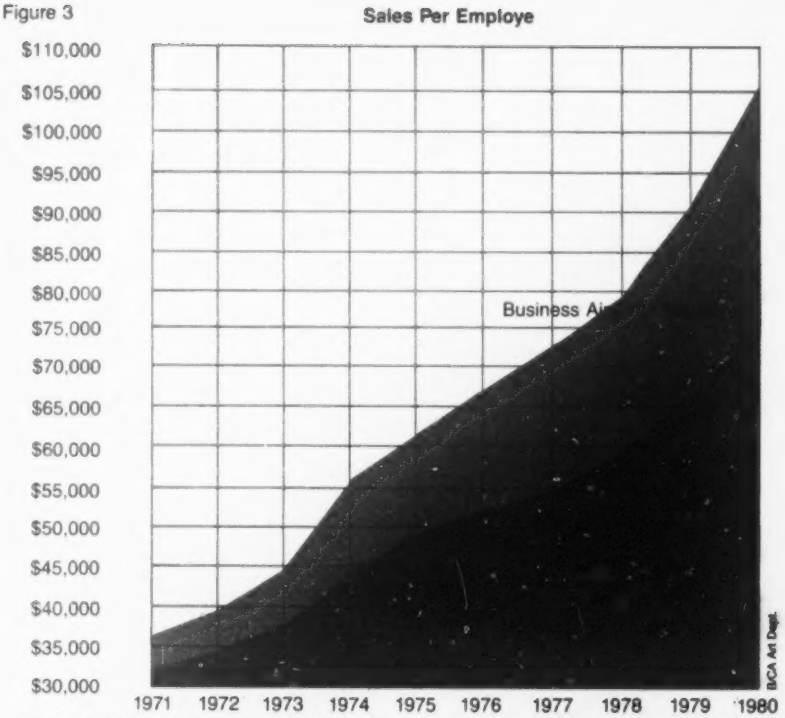
Companies operating aircraft completely outpaced nonoperators in total employment during 1980—14.7 million workers versus 2.9 million for nonoperators. However, the recessionary trends of 1980 did hit the *Fortune* 1,000 industrials in this area. During 1980 employment dropped 2.1 percent among the 1,000 companies—1.3 percent in the aircraft operating block and 5.7 percent for the nonoperating companies. One conclusion that might be drawn from these figures is that companies that operate aircraft are more stable places to work.

The total *Fortune* 1,000 fleet was up in 1980 by 9.2 percent versus only 4.2 percent in 1979, but the average company fleet increased only slightly to 3.7 aircraft. Interestingly, 188 of the 541 operating companies, or nearly 35 percent, operated only one aircraft. Only eight companies operated 19 or more aircraft with the largest fleet consisting of 38 airplanes.

Within the five largest fleet operators we find that the average fleet size is up to 34 aircraft versus 31 during the 1979 period. For 1980 the five largest operators and their 1979/1980 fleet sizes were: Tenneco, 35/38; Standard Oil of California, 37/37; Rockwell International, 32/36; Mobil 29/32 and Exxon, 18/28.

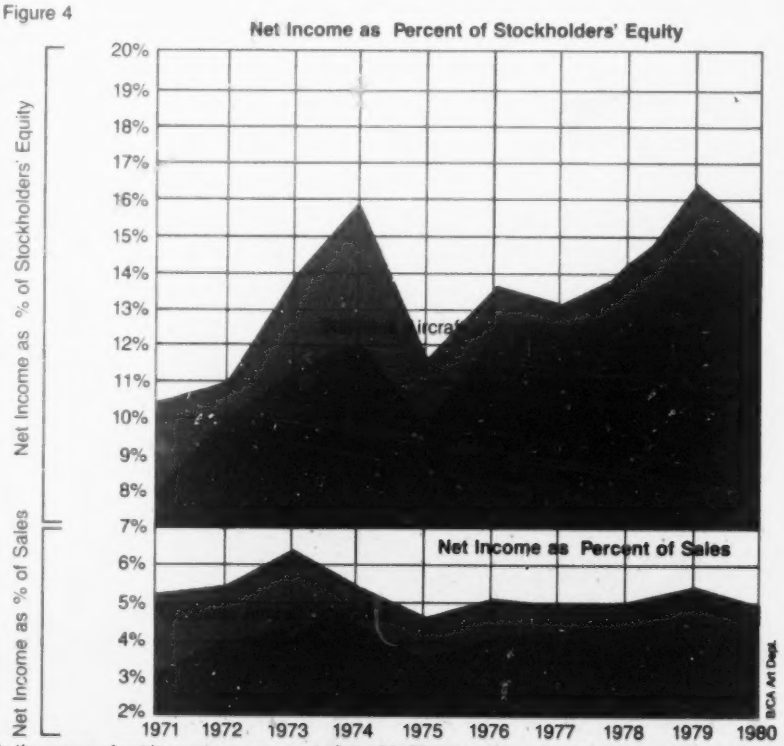
The *Fortune* 1,000 industrials are traditionally broken down into 28 categories

Figure 3



One of the most startling examples of the gap between operators and nonoperators is in the area of sales per employe. Continuing a 10-year trend, operators show a figure of $105,525 worth of sales per employe versus the figure from nonoperators of $75,376.

Figure 4



In the areas of net income as a percent of stockholders' equity and net income as a percent of sales, the difference is not as evident. However, aircraft operators still outpace nonoperators in these measurements.

ranging from mining and crude oil production to beverages.

Out of all the categories, the one group that stands apart from the rest, year after year, is petroleum refining.

While the petroleum refiners make up only 5.2 percent of the 1,000 companies on the *Fortune* list, they comprise 7 percent of the aircraft operators and operate 18 percent of the total *Fortune* fleet. This is by far the highest percentage for any category. And within the petroleum refining industry, 38 of the 52 refiners operate aircraft.

Compared with all *Fortune* 1,000 companies—including both aircraft operators and nonoperators—the refiners who operate aircraft account for 29 percent of the sales, 35 percent of the net income, 26 percent of the net assets, 25 percent of the stockholders' equity but only 7 percent of the total employes.

Note that 86 percent of the *Fortune* fleet is operated by the top 500 companies and 43 percent by the top 100 companies alone based on net sales. And out of the 28 categories listed by *Fortune*, every category contains at least two companies that operate aircraft.

There were 53 newcomers to the *Fortune* listing during 1980, and they brought 87 aircraft into the fleet. In addition, existing *Fortune* 1,000 companies acquired 272 new or used aircraft during the year. Eleven companies with 23 aircraft no longer had sufficient sales to qualify as a member of the *Fortune* 1,000. Thirteen companies sold their aircraft during 1980 and are no longer operators, and 190 aircraft flown by existing operators were either lost from service or sold. Nine companies were absorbed into larger corporations. In all there was a net gain of 17 aircraft operators in 1980.

For 1980, the *Fortune* fleet consisted of 945 turbojets, 491 turboprops and 392 piston aircraft. Turbine helicopters have grown to 10 percent of the *Fortune* fleet, and twin turbine helicopters, gaining in acceptance each year, now total 39 in operation for the 1980 period. Only eight piston helicopters remained in operation in 1980.

Older aircraft still make up a considerable portion of the *Fortune* fleet. Pepsi is still using for advertising a Travel Air built by Walter Beech in 1928. This aircraft is the oldest one in the *Fortune* fleet.

The average year of manufacture for the entire fleet was 1973. For the turbojets the average was 1973, for pistons 1970, for turbine helicopters 1975 and for piston helicopters 1970.

But the age of the 2,012 aircraft in service with the *Fortune* 1,000 hasn't kept the value of the fleet down. In fact the fleet value has increased by 82 percent over 1979. This dramatic gain is due in part to the repricing of the fleet and

Figure 5

Groups	Companies		Aircraft Operated
	Operators	Nonoperators	
Mining, Crude Oil Production	23	8	71
Food	53	35	138
Tobacco	5	2	19
Textiles, Vinyl Flooring	16	19	30
Apparel	10	16	18
Furniture	5	5	6
Paper, Fiber and Wood Products	31	21	118
Publishing, Printing	12	27	39
Chemicals	38	23	128
Petroleum Refining	38	14	346
Rubber, Plastic Products	10	10	31
Leather	2	3	4
Glass, Concrete, Abrasives, Gypsum	22	9	52
Metal Manufacturing	35	27	111
Metal Products	34	32	93
Electronic Appliances	38	42	154
Shipbldg, RR & Transport Equip.	8	12	13
Measuring, Scientific, Photo Equip.	15	25	38
Motor Vehicles	20	11	109
Aerospace	14	3	152
Pharmaceuticals	12	10	34
Soaps, Cosmetics	5	12	13
Office Equipment (Computers)	6	19	37
Industrial and Farm Equipment	61	40	195
Jewelry, Silverware	3	3	4
Musical Instr, Toys, Sport Goods	5	12	11
Broadcasting, Motion-Picture	8	5	11
Beverages	12	14	37
Average or Total	541	459	2,012

Figure 6

Business Aircraft Fleet Value ($ thousands)

	1978	1979	1980
Piston			
Single Engine	$ 2,873.5	$ 3,454.6	$ 5,454.6
Light Piston Twin	10,382.9	12,041.8	15,583.8
Pres. Piston Twin	8,744.3	9,627.7	11,922.7
Heavy Piston Twin	1,453.3	1,371.1	1,577.6
Pres. Piston 4-Eng.	127.3	124.7	139.7
Total	$ 23,581.3	$ 26,619.9	$ 34,678.4
Turboprop			
Light Turboprop	$167,127.3	$209,005.3	$287,305.6
Heavy Turboprop	56,560.8	50,808.7	98,722.5
Total	$223,778.1	$259,814.0	$386,028.1
Jet			
Light Jet (under 12,500 pounds	$ 57,376.5	$ 61,248.5	$ 75,376.9
Medium Jet (12,500 to 30,000)	603,559.1	700,381.5	1,137,749.0
Heavy Jet (over 30,000)	619,826.8	677,192.2	1,510,856.2
Total	$1,280,762.4	$1,438,820.2	$2,723,982.1
Helicopter			
Piston Helicopter	$265.4	0842.2	$333.8
Turbine Helicopter	17,455.4	20,628.7	30,017.3
Twin Helicopter	14,748.7	14,405.7	29,967.7
Total	$32,499.5	$35,676.6	$60,318.8
Grand Total	$1,560,601.3	$1,760,930.7	$3,205,007.4

Sales Per Employe		Net Income As a Percent of Sales		Net Income Per Employe		Net Income As A Percent of Stockholders' Equity	
Operators	Nonoperators	Operators	Nonoperators	Operators	Nonoperators	Operators	Nonoperators
$236,551	$ 98,700	9.1	10.3	$21,621	$9,932	22.2	13.8
95,731	110,045	3.4	3.0	3,261	3,281	15.5	13.9
98,846	84,043	7.7	8.9	7,641	7,472	19.8	22.2
48,525	47,937	2.9	2.1	1,420	1,006	8.7	7.0
37,882	46,497	3.8	4.2	1,446	1,974	13.0	16.6
48,979	46,317	5.5	2.6	2,718	1,221	14.8	8.0
96,000	84,255	5.5	5.2	5,261	4,352	11.7	14.0
75,439	63,962	7.1	6.3	5,393	4,024	16.8	16.7
103,257	104,600	5.7	3.2	5,894	3,341	13.6	9.8
429,469	292,154	6.0	1.4	25,780	4,033	21.1	8.7
62,249	69,202	1.4	0.2-	902	159-	4.9	1.0-
50,045	39,745	4.0	4.9	1,992	1,960	14.9	15.9
70,221	84,090	4.7	4.6	3,281	3,898	11.5	11.8
93,917	92,337	4.9	4.6	4,561	4,263	12.2	13.9
71,130	68,671	3.9	5.3	2,763	3,618	13.2	14.9
58,210	47,973	5.2	5.5	3,054	2,647	16.4	16.2
70,222	83,092	4.0	2.9	2,805	2,410	18.0	10.8
63,448	55,594	9.4	5.4	5,942	2,994	18.3	12.5
76,945	92,008	2.2-	2.0-	1,677-	1,877-	8.1-	9.9-
66,935	62,021	3.9	3.6	2,632	2,258	17.0	17.4
69,265	76,199	9.0	11.2	6,233	8,541	17.5	22.1
116,068	76,519	5.8	6.0	6,534	4,607	17.2	17.8
62,697	53,903	10.8	5.2	6,653	2,781	18.2	12.4
71,79[illegible]	65,006	4.5	4.4	3,212	2,845	11.9	12.4
55,878	81,268	4.2	4.0	2,364	3,230	16.5	10.6
56,686	61,853	3.2	4.0	1,795	2,483	8.9	14.4
92,671	114,278	6.7	8.5	6,245	9,656	16.8	17.0
90,070	105,197	5.8	3.8	5,053	4,003	16.3	12.3
105,525	75,376	5.0	4.6	5,244	3,475	15.1	13.9

bringing the value of each aircraft up to current price specifications, especially in the heavy jet category.

With operators spending a total of $385 million for new and used aircraft in 1980, the total fleet value of the 2,012 aircraft operated is just under $3.32 billion.

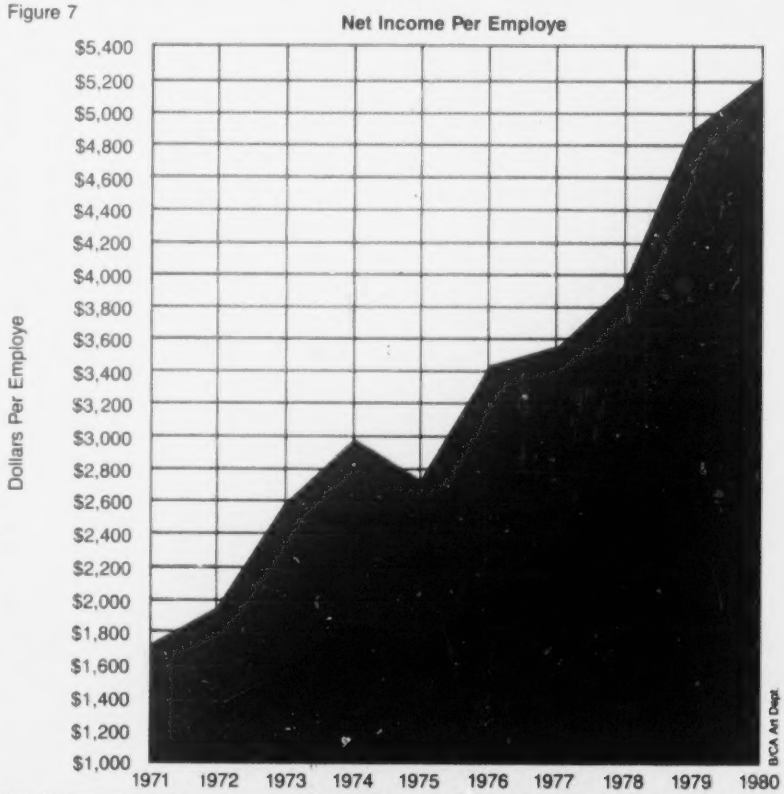
If the *Fortune* 1,000 companies continue to increase the value of the fleet by the existing five-year average of 23.9 percent per year, they will have spent $765 million in 1981, putting the value of the fleet close to the $4.0 billion mark.

All in all, there were 150 models of aircraft contained in the *Fortune* 1,000 fleet, produced by 46 manufacturers. However only eight manufacturers accounted for 77.1 percent of the total 1980 fleet and 81.0 percent of the dollar value.

It is difficult to say what, if any, effect the economic turmoil of 1981 will have on the fleet of corporate aircraft operated by the nation's top 1,000 industrials. The 1981 statistics should show how these supercorporations fared in the face of inflation, recession and a crippled air traffic control system. □

Reprints of this article—together with a full list of the Fortune *1,000 industrial companies—are available from B/CA Reprint, P.O. Box 278, Pratt Station, Brooklyn, New York 11205. Include order number 50360; single copy price is $2, and there is a 10 percent discount on orders of 25 or more.*

Figure 7



Net income per employe is a most favorable area of comparison between operators and nonoperators. Employes of aircraft-operating companies retain $5,244 of their income compared with $3,475 net income per employe for nonoperators.